

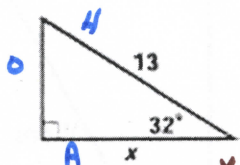
Name: Answer Key

Date: _____ Period: _____

Part Three: Missing side using Trigonometry

Directions: Solve for the missing side using trig.

1.



$$\cos 32^\circ = \frac{x}{13}$$

$$13 \cdot \cos 32^\circ = x$$

$$11.02 = x$$

2.

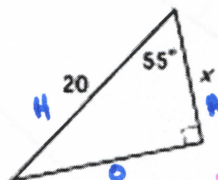


$$\tan 55^\circ = \frac{x}{4}$$

$$4 \cdot \tan 55^\circ = x$$

$$5.71 = x$$

3.



$$\cos 55^\circ = \frac{x}{20}$$

$$20 \cdot \cos 55^\circ = x$$

$$11.47 = x$$

4.

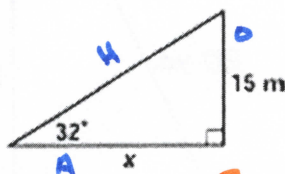


$$\sin 28^\circ = \frac{x}{15}$$

$$15 \cdot \sin 28^\circ = x$$

$$7.04 = x$$

5.



$$\tan 32^\circ = \frac{15}{x}$$

$$x = \frac{15}{\tan 32^\circ}$$

$$x = 24.01$$

6.

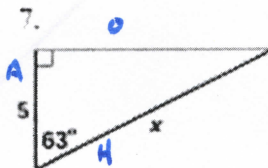


$$\sin 65^\circ = \frac{10}{x}$$

$$x = \frac{10}{\sin 65^\circ}$$

$$x = 11.03$$

7.

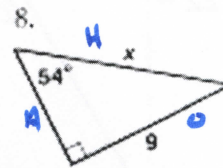


$$\cos 63^\circ = \frac{5}{x}$$

$$x = \frac{5}{\cos 63^\circ}$$

$$x = 11.01$$

8.

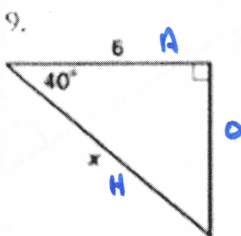


$$\sin 54^\circ = \frac{9}{x}$$

$$x = \frac{9}{\sin 54^\circ}$$

$$x = 11.12$$

9.



$$\cos 40^\circ = \frac{6}{x}$$

$$x = \frac{6}{\cos 40^\circ}$$

$$x = 7.83$$

10.

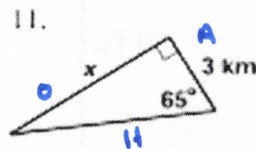


$$\tan 25^\circ = \frac{12}{x}$$

$$x = \frac{12}{\tan 25^\circ}$$

$$x = 25.73$$

11.

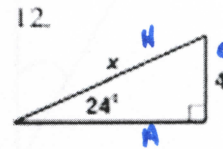


$$\tan 65^\circ = \frac{x}{3}$$

$$3 \cdot \tan 65^\circ = x$$

$$6.43 = x$$

12.



$$\sin 24^\circ = \frac{4}{x}$$

$$x = \frac{4}{\sin 24^\circ}$$

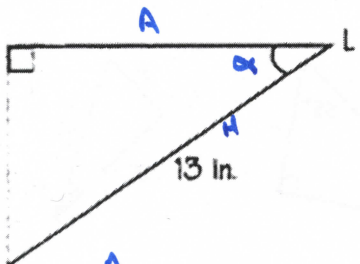
$$x = 9.83$$

Part Four: Missing Angle using Trigonometry.

Directions: Find the missing angle using trig.

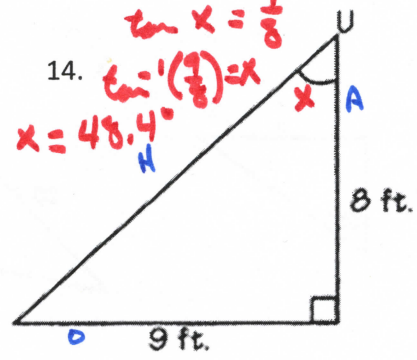
13.

$\sin \alpha = \frac{7}{13}$
 $\sin^{-1}(\frac{7}{13}) = x$
 $x = 32.6^\circ$



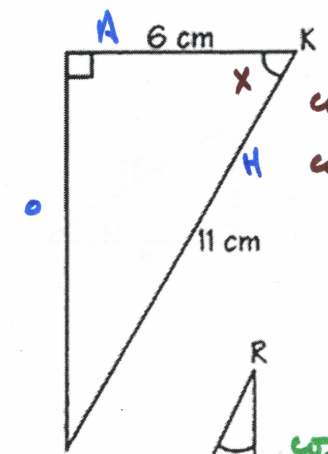
14.

$\tan x = \frac{9}{8}$
 $\tan^{-1}(\frac{9}{8}) = x$
 $x = 48.4^\circ$



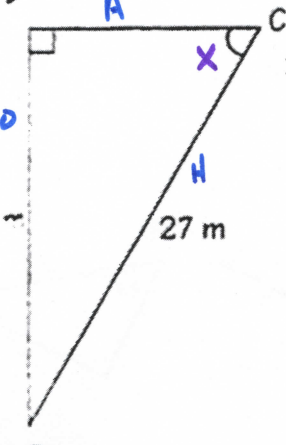
15.

$\cos x = \frac{6}{11}$
 $\cos^{-1}(\frac{6}{11}) = x$
 $56.9^\circ = x$



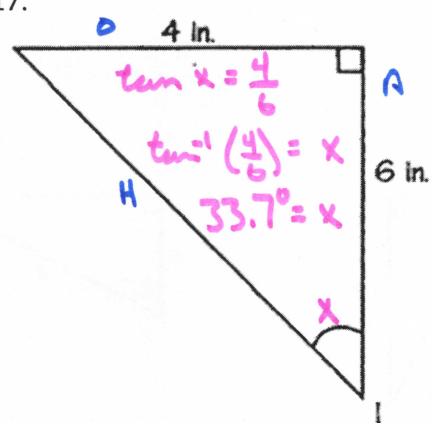
16.

$\sin x = \frac{22}{27}$
 $\sin^{-1}(\frac{22}{27}) = x$
 $54.6^\circ = x$



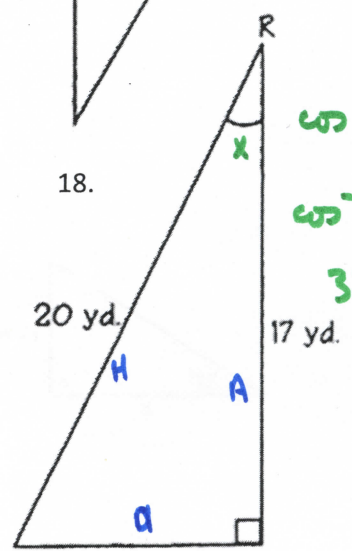
17.

$\tan x = \frac{4}{6}$
 $\tan^{-1}(\frac{4}{6}) = x$
 $33.7^\circ = x$



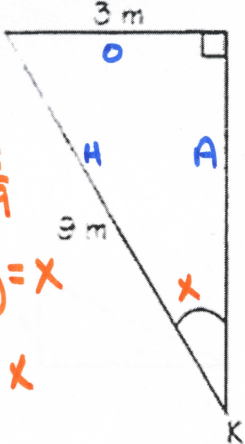
18.

$\cos x = \frac{17}{20}$
 $\cos^{-1}(\frac{17}{20}) = x$
 $31.8^\circ = x$



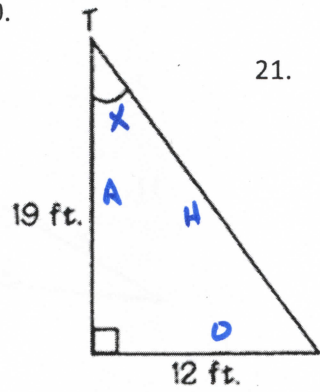
19.

$\sin x = \frac{3}{9}$
 $\sin^{-1}(\frac{3}{9}) = x$
 $19.5^\circ = x$



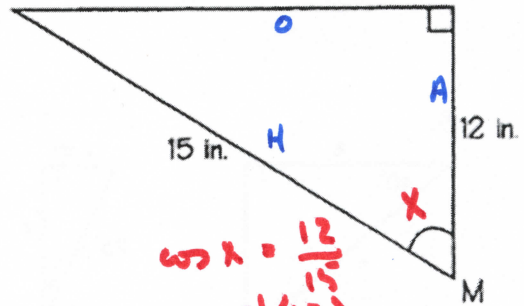
20.

$\tan x = \frac{12}{19}$
 $\tan^{-1}(\frac{12}{19}) = x$
 $32.3^\circ = x$



21.

$\cos x = \frac{12}{15}$
 $\cos^{-1}(\frac{12}{15}) = x$
 $36.9^\circ = x$



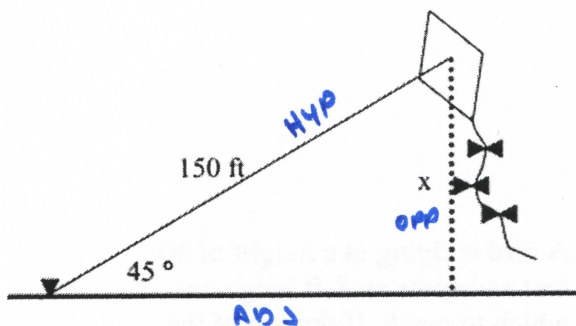
Part Five: Angle of Depression and Elevation*Directions: Solve for the missing angle or side.*

- 1) A kite with a string 150 feet long makes an angle of 45° with the ground. Assuming the string is straight, how high is the kite?

$$\sin 45^\circ = \frac{x}{150}$$

$$150 \sin 45^\circ = x$$

$$106.1 \text{ ft} = x$$

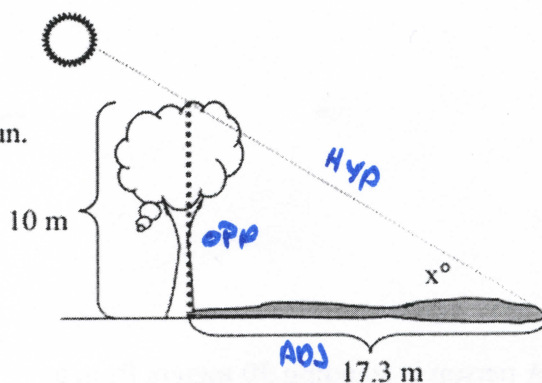


- 2) A tree 10 meters high casts a 17.3 meter shadow. Find the angle of elevation of the sun.

$$\tan x = \frac{10}{17.3}$$

$$\tan^{-1}\left(\frac{10}{17.3}\right) = x$$

$$30.0^\circ = x$$

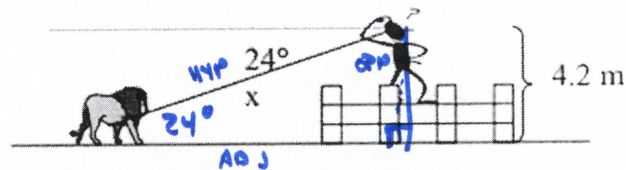


- 3) From the top of a fence, a person sites a lion on the ground at an angle of depression of 24° . If the man and the fence is 4.2 meters high, how far is the man from the lion?

$$\sin 24^\circ = \frac{4.2}{x}$$

$$x = \frac{4.2}{\sin 24^\circ}$$

$$x = 10.33 \text{ m}$$

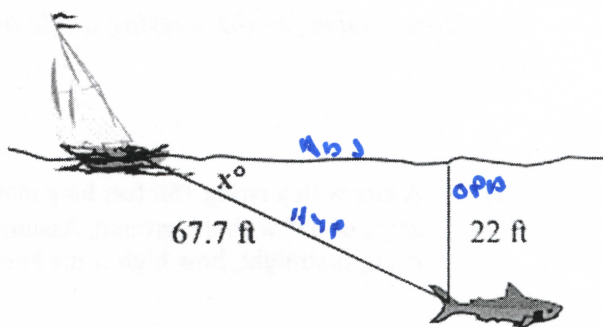


- 4) A great white shark swims 22 feet below sea level. If the shark is 67.7 feet from the sailboat, what is the angle of depression of the boat to the shark?

$$\sin x = \frac{22}{67.7}$$

$$\sin^{-1}\left(\frac{22}{67.7}\right) = x$$

$$18.96^\circ = x$$

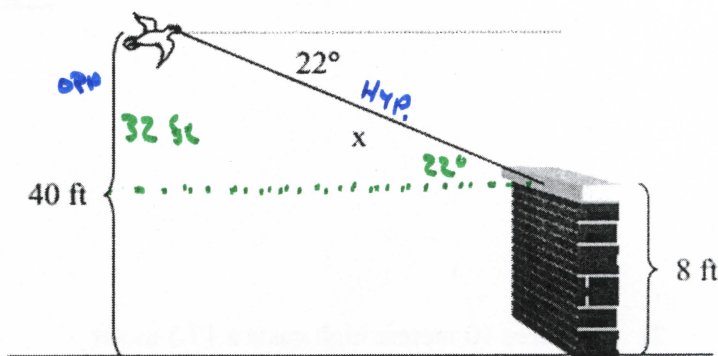


- 5) A bird is flying at a height of 40 feet and spots an 8-ft ledge on which to perch. If the top of the ledge is at a 22° angle of depression from the bird, how far must the bird fly before it can land? (Careful!)

$$\sin 22 = \frac{32}{x}$$

$$x = \frac{32}{\sin 22}$$

$$x = 85.4 \text{ ft}$$



- 9) A person is standing 30 meters from a traffic light. If the angle of elevation from the person's feet to the top of the traffic light is 25° , find the height of the traffic light.

$$\tan 25 = \frac{x}{30}$$

$$30 \cdot \tan 25 = x$$

$$13.99 \text{ m} = x$$

